

CLAIMS

1. An active matrix electroluminescent display device comprising an array of display pixels, each pixel comprising:
 - 5 an electroluminescent display element (2); and
 - active matrix circuitry including a drive transistor (22) for driving a current through the display element (2),
 - wherein the drive transistor (22) and the display element (2) are connected in series between a power line (26) for supplying or drawing a
 - 10 controllable current to or from the display element (2) and a common potential line, and
 - wherein the power line (26) and the common potential line each comprise a sheet electrode shared between all pixels of the array.
- 15 2. A device as claimed in claim 1, comprising a substrate (30), the active matrix circuitry overlying the substrate and an electroluminescent layer (34) overlying the active matrix circuitry.
3. A device as claimed in claim 2, wherein the display is backward emitting
- 20 through the substrate (30), and wherein the power line comprises a substantially transparent electrically conductive sheet (42) between the substrate (30) and the active matrix circuitry.
4. A device as claimed in claim 3, wherein an insulating layer (44) is
- 25 provided between the substantially transparent electrically conductive sheet (42) and the active matrix circuitry, contact portions (46) being provided through the insulating layer (44).
5. A device as claimed in claim 2, wherein the display is upward emitting
- 30 away from the substrate.

6. A device as claimed in claim 5, wherein the power line comprises a metal sheet (42) between the substrate (30) and the active matrix circuitry.

7. A device as claimed in claim 6, further comprising a second metal layer (50) between the substrate (30) and the active matrix layer, isolated from the first metal layer (42), and wherein the second metal layer is connected to the common potential line (38).

8. A device as claimed in claim 7, wherein the common potential line comprises a substantially transparent electrically conductive layer (38) forming the anodes of the EL display elements, and overlying the electroluminescent layer (34), and wherein the second metal layer (50) contacts the common potential line with contact portions (60) extending through the active matrix circuitry.

9. A device as claimed in claim 7, wherein the common potential line comprises a substantially transparent electrically conductive layer (74) and a metal layer (74) forming the cathodes of the EL display elements, and overlying the electroluminescent layer (34), and wherein the second metal layer (50) contacts the common potential line with contact portions (60) extending through the active matrix circuitry.

10. A device as claimed in claim 8 or 9, wherein the second metal layer (50) overlies the substrate (30), a first insulator layer (52) overlies the second metal layer, and the metal sheet (42) overlies the first insulator layer (52).

11. A device as claimed in claim 10, wherein a second insulating layer (44) is provided between the metal sheet (42) and the active matrix circuitry, contact portions being provided through the second insulating layer (44).

12. A device as claimed in claim 10 or 11, wherein contact portions which connect the second metal layer (50) to the common potential line (38; 74,76) extend through openings in the metal sheet (42).
- 5 13. A device as claimed in claim 6, wherein the common potential line comprises an ITO layer (38) forming the anodes of the EL display elements, and overlying the electroluminescent layer (34).
- 10 14. A device as claimed in claim 13, wherein an insulating layer (44) is provided between the metal sheet (42) and the active matrix circuitry, contact portions (46) being provided through the insulating layer.
- 15 15. A device as claimed in claim 5, wherein the substrate comprises a metal sheet which forms the power line.
16. A device as claimed in claim 5, 6, 7 or 9, wherein the electroluminescent display element anodes are adjacent the substrate (30) and the light emission is through the cathodes.
- 20 17. A device as claimed in claim 16, wherein the cathodes form the common potential line (74,76).
- 25 18. A device as claimed in claim 16 or 17, wherein the cathode comprises a substantially optically transparent conducting layer (74) of a first thickness, and a second layer (76) of a second, smaller thickness, and which comprises a low work function metal.
- 30 19. A device as claimed in any preceding claim, wherein the active matrix circuitry further comprises, for each pixel, an address transistor (16) connected between a data signal line (6) and an input to the pixel.

20. A device as claimed in claim 19, wherein the active matrix circuitry further comprises, for each pixel, a storage capacitor (24) connected between the power line (26) and the gate of the drive transistor (22).